

VILANDER et al
Serial No. 09/734,040

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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A telecommunications system having a replacement protocol architecture over an interface between nodes of the telecommunications system, the interface being one over which Asynchronous Transfer Mode (ATM) and ATM Adaptation Layer 2 (AAL2) protocols are conventionally employed as transport layer protocols, the replacement protocol architecture including, in lieu of the ATM and AAL2 protocols, Internet Protocol as a protocol above a link layer protocol, wherein the interface is one of: (1) an interface between a core network and a radio access network which carries circuit switched connections; (2) an interface between a radio network controller (RNC) and a base station; and (3) an interface between two radio network controllers (RNCs).

2. (Original) The system of claim 1, the Internet Protocol is immediately above the link layer protocol in the transport network layer.

3. (Original) The system of claim 1, wherein the interface carries a circuit switched connection, and wherein a protocol stack of the protocol architecture in the transport network layer comprises:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol.

4. (Original) The system of claim 3, wherein the link layer protocol is Ethernet protocol.

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5. (Original) The system of claim 4, wherein in the Internet Protocol a sequence number is carried in one of an IP option field and a Ipv6 extension header, the sequence number being used for rearranging incoming IP datagrams.

6. (Original) The system of claim 3, wherein the protocol stack of the protocol architecture further comprises, in a radio network layer, a frame handling protocol on top of the UDP Protocol.

7. (Original) The system of claim 6, wherein the frame handling protocol rearranges in-coming frames over the interface which carries a circuit switched connection.

8. (Original) The system of claim 7, wherein the frame handling protocol includes a sequence number field used for rearranging incoming frames.

9. (Currently Amended) The system of claim 1, wherein the protocol stack of the protocol architecture in the transport network layer comprises:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

XTP Protocol a user plane protocol on top of the UDP Protocol, the user plane protocol comprising user plane data packets which are borne in an IP datagram each user plane data packet having:

a connection identifier field;

a sequence number field;

a length field; and

a payload.

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10. (Original) The system of claim 9, wherein the link layer protocol is Ethernet protocol.

11. (Cancelled)

12. (Original) The system of claim 9, wherein plural user plane data frames are multiplexed in one IP datagram.

13. (Original) The system of claim 1, wherein the protocol stack of the protocol architecture in the transport network layer comprises:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

UAL2 Protocol on top of the UDP Protocol, wherein the UAL2 protocol each UAL2-PDU carries an integer number of AAL2 packets.

14. (Original) The system of claim 1, wherein the protocol stack of the protocol architecture in the transport network layer comprises:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

RTP Protocol on top of the UDP Protocol.

15. (Original) The system of claim 14, wherein the interface is between a radio access network and a core network, and wherein in the RTP Protocol one synchronization source (SSRC) identifier is allocated to each circuit switched connection between the node in the radio access network and the node in the core network.

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16. (Original) The system of claim 14, wherein the RTP Protocol compresses plural RTP packets in an IP datagram.

17. (Original) The system of claim 1, wherein the interface carries a packet switched connection, and wherein a protocol stack of the protocol architecture in the transport network layer comprises:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

a user plane protocol ~~XTP Protocol~~ on top of the UDP Protocol; the user plane protocol comprising user plane data packets which are borne in an IP datagram each user plane data packet having:

a connection identifier field;

a sequence number field;

a length field; and

a payload.

18. (Currently Amended) A method of operating a telecommunications system having a protocol architecture over an interface between nodes of the telecommunications system, the method comprising:

replacing Asynchronous Transfer Mode (ATM) and ATM Adaptation Layer 2 (AAL2) protocols conventionally employed as transport layer protocols over the interface with a protocol stack comprising including Internet Protocol as a protocol above a link layer protocol;

performing transmissions over the interface, the interface being one of:

an interface between a core network and a radio access network which carries circuit switched connections;

an interface between a radio network controller and a base station; and

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an interface between two radio network controllers.

19. (Previously Presented) The method of claim 18, the Internet Protocol is immediately above the link layer protocol in the transport network layer.

20. (Previously Presented) The method of claim 18, further comprising carrying a circuit switch connection over the interface, and forming a protocol stack of a protocol architecture in the transport network layer as follows:

- the link layer protocol;
- the Internet Protocol on top of the link layer protocol;
- UDP Protocol on top of the Internet Protocol.

21. The system of claim 20, wherein the link layer protocol is Ethernet protocol.

22. (Previously Presented) The system of claim 21, further comprising:
carrying, in the Internet Protocol, a sequence number in one of an IP option field and a Ipv6 extension header; and
using the sequence number for rearranging incoming IP datagrams.

23. (Previously Presented) The system of claim 20, wherein the protocol stack of the protocol architecture further comprises, in a radio network layer, a frame handling protocol on top of the UDP Protocol.

24. (Previously Presented) The system of claim 23, further comprising the frame handling protocol rearranging in-coming frames over the interface which carries a circuit switched connection.

25. (Previously Presented) The system of claim 24, further comprising including in the frame handling protocol a sequence number field for rearranging incoming frames.

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26. (Previously Presented) The method of claim 18, further comprising forming the protocol stack of the protocol architecture in the transport network layer as follows:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

~~XTP Protocol~~ a user plane protocol on top of the UDP Protocol, the user plane protocol comprising user plane data packets which are borne in an IP datagram each user plane data packet having:

a connection identifier field;

a sequence number field;

a length field; and

a payload.

27. The system of claim 26, wherein the link layer protocol is Ethernet protocol.

28. (Cancelled)

29. (Previously Presented) The system of claim 26, further comprising multiplexing plural user plane data frames in one IP datagram.

30. (Previously Presented) The method of claim 18, further comprising forming the protocol stack of the protocol architecture in the transport network layer as follows:

the link layer protocol;

the Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

UAL2 Protocol on top of the UDP Protocol, wherein the UAL2 protocol each UAL2-PDU carries an integer number of AAL2 packets.

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31. (Previously Presented) The method of claim 18, further comprising forming the protocol stack of the protocol architecture in the transport network layer as follows:
the link layer protocol;
the Internet Protocol on top of the link layer protocol;
UDP Protocol on top of the Internet Protocol; and
RTP Protocol on top of the UDP Protocol.

32. (Previously Presented) The method of claim 31, wherein the interface is between a radio access network and a core network, and wherein the method further comprises allocating, in the RTP Protocol, one synchronization source (SSRC) identifier to each circuit switched connection between the node in the radio access network and the node in the core network.

33. (Previously Presented) The method of claim 31, wherein the RTP Protocol compresses plural RTP packets in an IP datagram.

34. (Previously Presented) The method of claim 31, further comprising:
carrying on the interface a packet switched connection, and
forming a protocol stack of the protocol architecture in the transport network layer as follows:

the link layer protocol;
the Internet Protocol on top of the link layer protocol;
UDP Protocol on top of the Internet Protocol; and
a user plane protocol ~~XTP Protocol~~ on top of the UDP Protocol; the user plane protocol comprising user plane data packets which are borne in an IP datagram each user plane data packet having:

a connection identifier field;

a sequence number field;

a length field; and

a payload.

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PLEASE ADD NEW CLAIMS 35 - 40 AS FOLLOWS:

35. (New) The system of claim 1, further comprising means for re-ordering incoming IP datagrams of the Internet Protocol as necessary.

36. (New) The system of claim 35, wherein the Internet Protocol is modified for re-ordering the incoming IP datagrams of the Internet Protocol as necessary.

37. (New) The system of claim 35, wherein a protocol stack above the Internet Protocol rearranges the incoming IP datagrams of the Internet Protocol as necessary.

38. (New) The method of claim 18, further comprising re-ordering incoming IP datagrams of the Internet Protocol as necessary.

39. (New) The system of claim 40, modifying the Internet Protocol for re-ordering the incoming IP datagrams of the Internet Protocol as necessary.

40. (New) The system of claim 40, further comprising using a protocol stack above the Internet Protocol to rearrange the incoming IP datagrams of the Internet Protocol as necessary.

41. (New) A telecommunications system having a protocol architecture over an interface between nodes of the telecommunications system, wherein a protocol stack of the protocol architecture in the transport network layer comprises:

a link layer protocol;

Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol;

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wherein the interface is one of: (1) an interface between a core network and a radio access network which carries circuit switched connections; (2) an interface between a radio network controller (RNC) and a base station; and (3) an interface between two radio network controllers (RNCs); and

wherein UDP port numbers of the UDP Protocol are used as connection identifiers.

42. (New) The system of claim 41, the Internet Protocol is immediately above the link layer protocol in the transport network layer.

43. (New) The system of claim 41, wherein the interface carries a circuit switched connection.

44. (New) The system of claim 41, wherein the link layer protocol is Ethernet protocol.

45. (New) The system of claim 41, wherein in the Internet Protocol a sequence number is carried in one of an IP option field and a Ipv6 extension header, the sequence number being used for rearranging incoming IP datagrams.

46. (New) The system of claim 41, wherein the protocol stack of the protocol architecture further comprises, in a radio network layer, a frame handling protocol on top of the UDP Protocol.

47. (New) A telecommunications system having a protocol architecture over an interface between nodes of the telecommunications system, wherein a protocol stack of the protocol architecture in the transport network layer comprises:

a link layer protocol;

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Internet Protocol on top of the link layer protocol;
UDP Protocol on top of the Internet Protocol; and
RTP Protocol on top of the UDP Protocol, and
wherein the interface is between a radio access network and a core network.

48. (New) The system of claim 47, wherein in the RTP Protocol one synchronization source (SSRC) identifier is allocated to each circuit switched connection between the node in the radio access network and the node in the core network.

49. (New) The system of claim 47, wherein the RTP Protocol compresses plural RTP packets in an IP datagram.

50. (New) A method of operating a telecommunications system having a protocol architecture over an interface between nodes of the telecommunications system, the interface being one of: (1) an interface between a core network and a radio access network which carries circuit switched connections; (2) an interface between a radio network controller (RNC) and a base station; and (3) an interface between two radio network controllers (RNCs); the method comprising:

including in, a protocol stack of the protocol architecture in the transport network layer, the following:

a link layer protocol;
Internet Protocol on top of the link layer protocol;
UDP Protocol on top of the Internet Protocol; and
using UDP port numbers of the UDP Protocol as connection identifiers.

51. (New) The method of claim 50, the Internet Protocol is immediately above the link layer protocol in the transport network layer.

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52. (New) The method of claim 50, wherein the interface carries a circuit switched connection.

53. (New) The method of claim 50, wherein the link layer protocol is Ethernet protocol.

54. (New) The method of claim 50, wherein in the Internet Protocol a sequence number is carried in one of an IP option field and a Ipv6 extension header, the sequence number being used for rearranging incoming IP datagrams.

55. (New) The method of claim 50, wherein the protocol stack of the protocol architecture further comprises, in a radio network layer, a frame handling protocol on top of the UDP Protocol.

56. (New) A method of operating a telecommunications system having a protocol architecture over an interface between a radio access network and a core network, the method comprising including, in a protocol stack of the protocol architecture in the transport network layer, the following:

a link layer protocol;

Internet Protocol on top of the link layer protocol;

UDP Protocol on top of the Internet Protocol; and

RTP Protocol on top of the UDP Protocol.

57. (New) The method of claim 56, further comprising allocating, in the RTP Protocol, one synchronization source (SSRC) identifier to each circuit switched connection between the node in the radio access network and the node in the core network.

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58. (New) The method of claim 56, further comprising using the RTP Protocol to compress plural RTP packets in an IP datagram.